



US009915512B1

(12) **United States Patent**
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(10) **Patent No.:** **US 9,915,512 B1**
(45) **Date of Patent:** **Mar. 13, 2018**

(54) **TECHNOLOGIES FOR ANALYZING AND DEACTIVATING AN EXPLOSIVE DEVICE**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 323 days.

(21) Appl. No.: **14/939,680**

(22) Filed: **Nov. 12, 2015**

(51) **Int. Cl.**
G01L 5/14 (2006.01)
F42C 99/00 (2006.01)

(52) **U.S. Cl.**
CPC **F42C 99/00** (2013.01)

(58) **Field of Classification Search**
None
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,356,024 A * 12/1967 Driscoll F42B 3/192
102/202.6
3,589,294 A * 6/1971 Stresau F42C 11/02
102/202.8
4,719,797 A * 1/1988 Weickert F42B 35/00
73/167

5,027,709 A * 7/1991 Slagle F42B 8/28
102/293
6,439,127 B1 * 8/2002 Cherry F42B 12/36
102/402
2007/0209500 A1 * 9/2007 Wilber F42D 5/045
86/50
2009/0188379 A1 * 7/2009 Hiza F42D 5/00
86/50
2013/0202073 A1 * 8/2013 Shaban H05H 3/06
376/114
2016/0209194 A1 * 7/2016 Schill, Jr. F41H 11/136

* cited by examiner

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(57) **ABSTRACT**

Technologies for analyzing and deactivating an explosive device include electrically connecting an analysis device to a pair of trigger wires of the explosive device, performing a number of electrical measurements, and determining a deactivation action to be performed on the explosive device based on the electrical measurements (e.g., based on the calculated resistance between the trigger wires). In a disclosed embodiment, a primary lead of the analysis device is electrically coupled to a first trigger wire of the explosive device and a pair of secondary leads are each electrically coupled to a second trigger wire of the explosive device. The analysis device measures a voltage between the primary lead and at least one of the secondary leads. The analysis device also measures a current flowing through the secondary leads after a link of trigger wire extending between the leads has been cut or broken. The analysis device determines the deactivation action by determining a resistance of the analysis device based on the measured voltage and current. The deactivation action may include applying shunt to the trigger wires or cutting one or more trigger wires.

32 Claims, 12 Drawing Sheets

